

## A New Record of Genus *Higginsia* (Poecilosclerida: Desmoxyidae) from Korea

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### ABSTRACT

A taxonomic study on the marine sponges was conducted with materials which were collected from Hongdo Island, Korea by SCUBA diving in September 2004. Among them, *Higginsia mixta* Hentschel, 1912 is newly recorded in the Korean fauna.

**Key words:** Poecilosclerida, Desmoxyidae, *Higginsia*, Korea

### INTRODUCTION

The family Desmoxyidae Hallmann, 1917 (Demospongiae: Halichondrida) consists of 19 genera and about 100 species worldwide. Desmoxyids are widely distributed and live mainly in the shallow water. Major morphological characters of this family are spined or smooth diactinal microscleres such as oxeas or strongyles (Hooper and van Soest, 2002). The genus *Higginsia* has confused choanosomal skeleton which is made of an elaborated bundle of megascleres, although the skeletal structure ranges from a halichondroid skeletal structure with a partially compressed, reticulated axis to an irregular plumo-reticulate, extra-axial construction (Hooper and Lévi, 1993). This genus is the first record in the family Desmoxyidae from Korea.

The present study on marine sponges is based on the specimens collected from Hongdo Island Korea by SCUBA diving in September 2004. All procedures was followed the methods of Kim and Sim (2005) and Rützler (1978). The materials examined in this study were deposited in the Departments of Biological Science, Hannam University, Daejeon, Korea.

### SYSTEMATIC ACCOUNTS

Order Halichondrida Gray, 1867

Family Desmoxyidae Hallmann, 1977

*Higginsia mixta* (Hentschel, 1912) (Fig. 1)

*Dendropsis mixta* Hentschel, 1912, p. 415.

*Higginsia mixta* Bergquist, 1965, p. 176.

*Material examined.* Bangguyeon (Hongdo Is.), 9 Sep. 2004.

*Description.* This species, irregularly massive and erect, measures up to 6.5 × 5.3 cm wide and 2.9 cm thick. Surface has long and sharply ended conules. Oscules and pores, invisible. Texture, tough and compressible. Colour, orange in life, gradually changing to ivory in alcohol. Ectosomal skeleton with slender extra-axial oxeas protruding from surface, of creating sparse plumose bundles. Choanosomal skeleton formed predominantly elaborate bundles with megascleres. Choanosomal megascleres, exclusively oxeas, robust, relatively long, straight or slightly curved at centre, usually symmetrical, with fusiform, tapering, sharp, rarely telescoped points. Extra-axial styles, variable in length, usually very long, slender, slightly curved, sometimes straight or sinuous, with evenly rounded bases, sharp, rarely telescoped points. Ectosomal oxeas, very long, slender, usually slightly curved; these spicules not confined exclusively to ectosomal region, but also found in smaller quantities in choanosomal skeleton tracts. Microscleres; acanthoxeas, relatively long, slender, with slight angular curvature at centre, tapering to sharp point, evenly covered with small spines.

*Spicules.*

Megascleres

Long oxea ..... 1100-1350 × 20-30 μm

Slender Oxea ..... 660-900 × 8-10 μm

Style ..... 1700-2020 × 8-20 μm

Microscleres

Acanthoxea ..... 75-200 × 5-7 μm

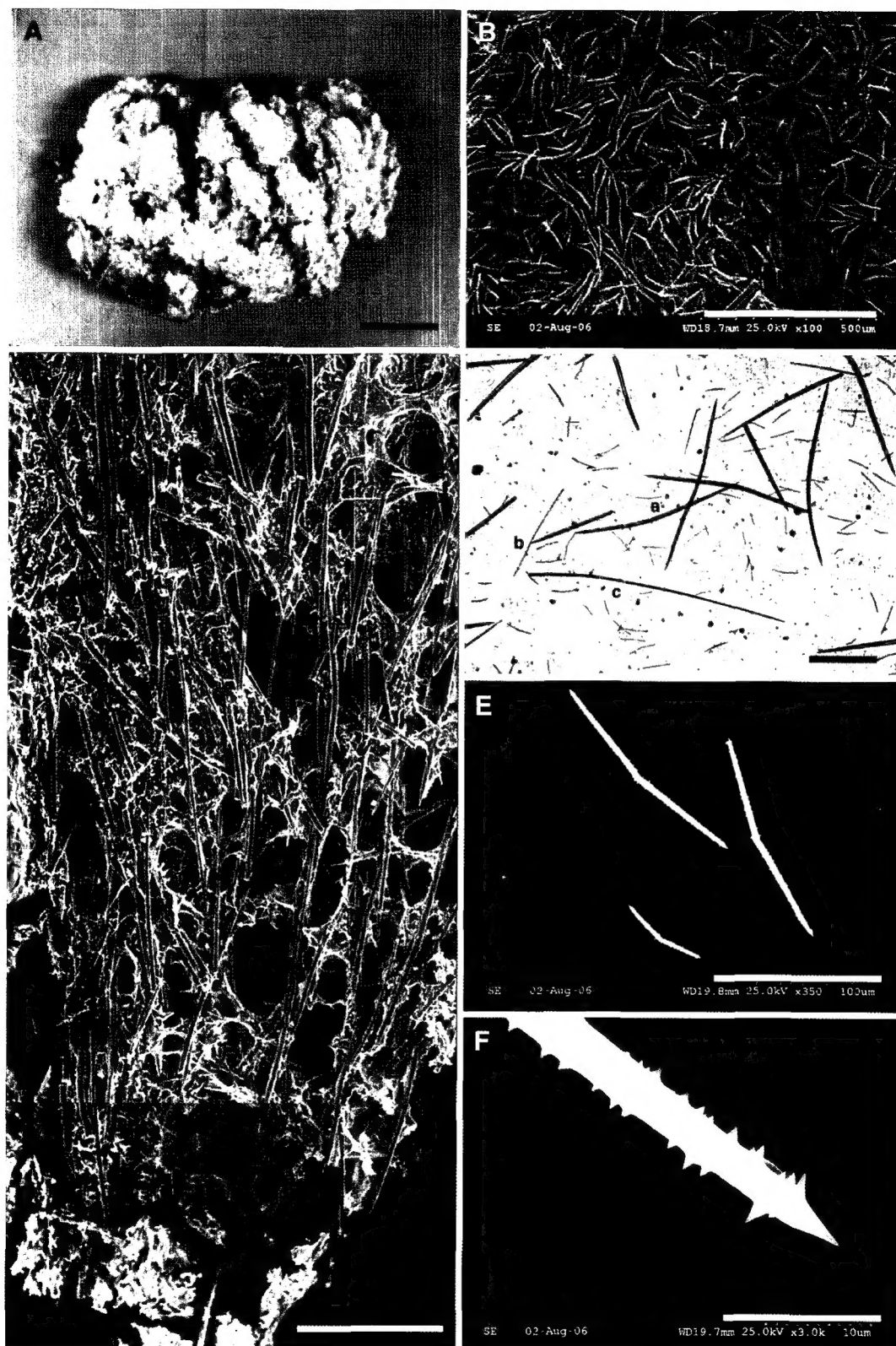
*Remarks.* Our specimen is slightly different with the specimen of Bergquist (1965) in spicule size of style and long oxea, but other characters (color, structure of ectosomal and choanosomal skeleton and size of slender oxea and acanthoxea) are similar to Bergquist's (Table 1).

*Distribution.* Korea (Hongdo Is.), Aru Islands, Palau.

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**Fig. 1.** *Higginsia mixta*. A, entire specimen; B, ectosomal skeleton; C, choanosomal skeleton; D, spicules (a: long oxea, b: slender oxea, c: style); E, acanthoxea; F, end of the acanthoxea. Scale bars=1.5 cm (A), 1 mm (C), 500  $\mu$ m (B), 300  $\mu$ m (D), 100  $\mu$ m (E), 10  $\mu$ m (F).

**Table 1.** Comparison in spicule dimensions of *Higginsia mixta*

Species	Spicule ( $\mu\text{m}$ )			
	Choanosomal megascleres	Extra-axial megascleres	Ectosomal megascleres	Microscleres
	Long oxeas	Styles	Slender oxeas	Acanthoxeas
<i>Higginsia mixta</i> (Bergquist, 1965)	1025-1150 $\times$ 16-21	1900-3125 $\times$ 14-18	650-912 $\times$ 5-7	62-200 $\times$ 2-5
Our species	1100-1350 $\times$ 20-30	1700-2020 $\times$ 8-20	660-900 $\times$ 8-10	75-200 $\times$ 5-7

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## REFERENCES

- Bergquist, P.R., 1965. The sponges of Micronesia, Part I. The Palau Archipelago. *Pac. Sci.*, 19: 123-204.
- Hentschel, E., 1912. Kiesel und Hornschwamme der Aruuhnd kei Inseln. *Abh. Senckenb. Ges.*, 34: 295-448.
- Hooper, J.N.A. and C. Lévi, 1993. Axinellida (Porifera : Demospongiae) from the New Caledonia Lagoon. *Invertebr. Taxon.*, 7: 1395-1472.
- Hooper, J.N.A. and R.W.M. van Soest, 2002. *Systema Porifera: A guide to the classification of sponges*. Kluwer Academic/Plenum Publishers, New York, pp. 755-772.
- Kim, H.J. and C.J. Sim, 2005. Two new marine sponges of genus *Clathria* (*Clathria*) (Poecilosclerida: Microcionidae) from Korea. *Korean J. Syst. Zool.*, 21: 111-122.
- Rützler, K., 1978. Sponges in coral reefs. *In* Stoddart, D.R. and R.E. Johannes, eds., *Coral reefs: Research Methods*. Monogr. Oceanogr. Neth. (UNESCO), pp. 299-313.

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